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IMPOSED PERTUBATIONS OF ICF CAPSULES AND 3D R-T TARGET FOILS USING EXCIMER LASER ABLATION*

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Surface perturbations, i.e., deviations from perfect sphericity, on ICF capsules result in growth of Rayleigh-Taylor (R-T) instabilities during the acceleration phases of an implosion. To test current theories of Rayleigh-Taylor growth and its effect on target performance, we are investigating methods of applying known perturbations to planar foils and smooth ICF capsules. A successful technique has been excimer laser ablation. We will report on the development of an excimer laser ablation micromachining workstation for ICF capsules and R-T samples. Characterization of excimer laser ablated surfaces of relevant plasma ablators will be described. Ablation patterns that give the desired surface finish are presented. Lastly, we will discuss the characterization and analysis of roughened laser ablated capsules and 3D R-T target foils used in ICF experiments.

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